

Please amend the claims as indicated below:

1-24 (Canceled)

25. (Withdrawn)

26. (Currently amended) An apparatus [[of]] for positioning solder balls in a desired array on a substrate, comprising:

a guide positioning member which is constructed and configured to direct the solder balls to required positions corresponding to the array of positions the solder balls are to take up on the substrate;  
a container for a plurality of solder balls, the container being movable between configured and operable to move in a first direction from a first position remote from the guide positioning member and to a second position directly in communication with the guide positioning member to provide solder balls to the positioning member, and to move in a second direction opposite to the first direction from the second position to the first position to move the solder balls not in required positions away from the positioning member; and  
a mechanism constructed and configured to apply a force to the solder balls in the container in the direction of movement of the container as the container moves between the first position [[to]] and the second position.

27. (Currently amended) An apparatus according to claim 26, wherein the biasing means mechanism to apply a force to the solder balls comprises a tilting means mechanism adapted to rotate the container about an axis perpendicular to the direction of motion of the container and thereby tilt it.

28. (Currently amended) An apparatus according to claim 27, wherein the container and positioning means member are rotatable a plurality of times when the container is in position

directly over the positioning means member, so that the older solder balls are repeatedly spread over the positioning means member.

29. (Previously presented) An apparatus according to claim 27, wherein rotational angles of the container and/or the moving speed of the container are controllable to optimize the efficiency of the apparatus.

30. (Previously presented) An apparatus according to claim 28, wherein there is a guide positioning rail and motor whereby the motion of the container is guide positioning and driven.

31. (Previously presented) An apparatus according to claim 26, which includes a vibration-generating device to facilitate the separation of solder balls from surfaces they are in contact with and/or from one another.

32. (Currently amended) An apparatus according to claim 26, wherein the positioning means member includes a ball template with a plurality of apertures each slightly larger than the size of a solder ball in order to capture solder balls within the ball template, and wherein the plurality of apertures are arranged in an order similar to the array of positions comprising solder pads on the substrate.

33. (Currently amended) An apparatus according to claim 31, wherein solder balls captured in the plurality of apertures are removable by a pick-and-place device while retaining their respective positions, and placed onto corresponding positions of solder pads on the substrate.

34. (Currently amended) An apparatus according to claim 31, which includes means to rotate the container, ball template and substrate simultaneously.

35. (Currently amended) An apparatus according to claim 31, wherein the apertures comprise through-holes which allow solder balls to fall through the ball template directly onto a substrate placed below it.

36. (Currently amended) An apparatus according to claim 31, wherein there is a separator capable of separating the ball template from the substrate in use, and the separator is movable from a first position where passage of solder balls from the ball template onto the substrate is prevented and a second position where passage of the solder balls from the ball template onto the substrate is permitted.

37. (Currently amended) An apparatus according to claim 26, wherein the container is closed at the top to reduce oxidation of the solder balls and open at the bottom for direct entry of the balls to the positioning ~~means~~ member substantially throughout the bottom of the container.

38. (Currently amended/Withdrawn) A method of positioning solder balls in a desired array on a substrate, comprising the steps of:  
providing a plurality of solder balls in a container;  
configuring a guide positioning member to position solder balls in [[a]] desired positions in an array corresponding to the positions the solder balls are to take up on the substrate;  
moving the container between in a first direction from a first position remote from the guide positioning member and to a second position where it is in communication with the guide positioning member;  
positioning solder balls from the container in the desired array using the positioning member  
when the container is in the vicinity of the second position;  
moving the container from the second position to the first position in a direction opposite to the  
first direction to move the solder balls not in desired positions away from the positioning  
member; and

applying a force to the solder balls in the container in the direction of movement of the container as the container moves between the first position [[to]] and the second position thereby to reduce or obviate damage to the solder balls during such movement; and  
positioning solder balls from the container in the desired array using the guide member when the container is at the second position.

39. (Currently amended/Withdrawn) A method according to claim 38, wherein the biasing of application of force to the solder balls is caused by the tilting of the container towards the direction of movement of the container [[is]] such that the weight of the solder balls creates a biasing force in the said direction.

40. (Currently amended/Withdrawn) A method according to claim 39, wherein including controlling the angle of tilting the container and the speed of displacement of the container are controllable in order to optimize the efficiency of positioning the solder balls.

41. (Canceled)

42. (Currently amended/Withdrawn) A method according to claim 41, which includes the step of moving the container to the location over the positioning means member a plurality of times in order to increase the number of solder balls captured by the positioning means member.

43. (Currently amended/Withdrawn) A method according to claim 39, which includes rotating the container a plurality of times [whilst] while the container is located over in communication with the positioning means member so that the solder balls are repeatedly spread over the position means member.

44. (Currently amended/Withdrawn) A method according to claim 38, which includes the step of vibrating the container during movement of the container and/or while the container is located over the positioning means member.

45. (Currently amended/Withdrawn) A method according to claim 38, wherein the positioning ~~means~~ member includes a ball template with a plurality of apertures each slightly larger than the size of a solder ball, which plurality of apertures capture solder balls within the ball template, and wherein the plurality of apertures are arranged in an order similar to the array of positions comprising solder pads on the substrate.

46. (Withdrawn) A method according to claim 45, wherein solder balls captured in the plurality of apertures are removed by a pick-and-place device while retaining their respective positions, and placed onto corresponding positions of solder pads on the substrate.

47. (Withdrawn) A method according to claim 45, wherein the container, ball template and substrate are rotated simultaneously.

48. (Withdrawn) A method according to claim 45, wherein the apertures comprise through holes which allow solder balls to fall through the ball template directly onto a substrate placed below it.

49. (Withdrawn) An apparatus according to claim 45, wherein in use a separator separates the ball template from the substrate, and the separator is movable from a first position where passage of solder balls from the ball template onto the substrate is prevented and a second position where passage of the solder balls from the ball template onto the substrate is permitted.

50. (New/Withdrawn) A substrate having arranged thereon a plurality of solder balls in a desired array produced according to the method of claim 38.

51. (New) An apparatus according to claim 32, wherein the plurality of apertures are located substantially toward one end of the positioning member whereby the container is in communication with the apertures on the positioning member only while the container is in the vicinity of the second position.